



Cathay July 2025

www.cathayradio.org

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Mission: The Cathay Amateur Radio Club is basically an active social club of Ham Radio Operators and their spouses. We support local community requests for HAM emergency communications. Several of us are trained in CPR/ First Aid and are involved with community disaster preparedness.

Monday Night Net Time: 9 PM Local Time/PST, As of 8/21/2023 we are switching over from using Repeater: WB6TCS to **Nick Cassarino's Repeater: WA6GEL UHF 444.800 Mhz, Offset +5 Mhz, CTCSS/Tone PL 179.9 Hz on Monument Peak, Milpitas. If you are in the North Bay, one can use the WA6GEL repeater North Bay located on Mt. San Bruno - 444.8 MHz offset +5 Mhz, CTCSS/Tone PL173.3 Hz**

The CARC Monday night net is the best way to find out the latest club news. All check-in are welcome.

Message on Behalf of the President: Leonard Tom, *NX6E*

Hello CARC Members and Friends;

Many thanks to both Nick Cassarino for the use of repeater – WA6GEL for our CARC Monday Night Net.

Additional folks are needed to help out with conducting the CARC radio net on Monday nights. Please contact Ed Fong (edison_fong@hotmail.com) if you are interested.

I wish to thank our CARC members that set aside their valuable time to participate in our Monday night's nets.

Introduction to CARC/SARES ARRL Field Day Summary Write Up

Pictures and post CARC/SARES ARRL Field Day event write up are at the bottom of this newsletter. Many thanks to Ed Fong – WB6IQN for hosting the Field Day Event.

Introduction to Tech Section:

Check out 3D printing using multiple materials.

For more details, see the Tech Section of this newsletter.

CARC Final News Wrap Up

Chat sub s'em to all you CARC members! - Leonard Tom, *NX6E*

Public Service Announcements

HAM CRAM / HAM Licensing

For upcoming HAM Licensing locations please refer to:

<http://www.arrl.org/find-an-amateur-radio-license-exam-session>

Auxiliary Communications Service (ACS)

The Auxiliary Communications Service (ACS) is a unit of trained professionals who supply communications support to the agencies of the City and County of San Francisco, particularly during major events/incidents. ACS goals are the support of gathering and distribution of information necessary to respond to and recover from a disaster.

The ACS Net begins at 1930 hours (7:30 p.m. PT) local time each Thursday evening, on the WA6GG repeater at 442.050 MHz, positive offset, tone 127.3 Hz. The purpose of this net is to practice Net Control skills, practice checking in with deployment status in a formal net, and to share information regarding upcoming ACS events. Guests are welcome to check in. ACS members perform Net Control duty on a regular basis. On the second Thursday of each month, the net is conducted in simplex mode on the output frequency of the WA6GG repeater, 442.050 MHz no offset, tone 127.3 Hz.

ACS holds its General Meetings on the third Tuesday of each month from 1900 hours to 2100 hours local time. Currently meetings are exclusively conducted over Zoom during the COVID-19 pandemic, ACS looks forward to meeting in person again as soon as possible.

Upcoming meeting dates in 2025 are:

- July 15, 2025
- August 19, 2025
- September 17, 2025

Location of in person future ACS meetings are yet to be determined as the regular location is under reconstruction. All interested persons are welcome to attend. For further information contact Corey Siegel KJ6LDJ <kj6ldj@gmail.com>.

For more information, please attend an ACS meeting, check in on the ACS radio net, or call 415-558-2717.

Free Disaster Preparedness Classes In San Francisco – NERT Taught by San Francisco Fire Department (SFFD).

<https://sf-fire.org/nert/nert-calendar-meetings-trainings-events>

Training Classes: see above website. TBD

+ Recertifications

TBD

***SFFD DOT** is the Fire Department Division of Training. All participants walking, biking or driving **enter through the driveway gate on 19th St.** between Folsom and Shotwell. Parking is allowed along the back toward the cinderblock wall.

Visit www.sfgov.org/sffdnert to learn more about the training, other locations, and register on line. Upcoming Special NERT Events.

San Francisco Police Department: Auxiliary Law Enforcement Response Team (ALERT)

The Auxiliary Law Enforcement Response Team (ALERT) is a citizen disaster preparedness program designed. The ALERT program is for volunteers 16 years of age or older, who live, work, or attend high school in San Francisco.

Graduates of the San Francisco Police Activities League (P.A.L) Law Enforcement Cadet Academy are also eligible to join.

ALERT volunteers will no longer need to complete the Fire Department's Neighborhood Emergency Response Team (NERT) (www.sfgov.org/sfnert) training and then graduate into two 8 hour Police Department course specifically designed for ALERT team members.

ALERT members will work closely with full-time and/or Reserve Police Officers in the event they are deployed after a disaster. The Basic ALERT volunteer will have no law enforcement powers other than those available to all citizens.

SFPD ALERT Training (New Members)

The next SFPD ALERT training class has been scheduled for: TBD

*Class date indicated are only for new members

IMPORTANT- All participants must complete the background interview process in order to be eligible to attend the ALERT training class.

Eligible ALERT participants may register for a training class by contacting the ALERT Program Coordinator, marina.chacon@sfgov.org, or by telephone at 415-401-4615.

SFPD ALERT Practice/Training Drill

All active/trained ALERT members are asked to join us for our next training drill, via scheduled for on TBD

For more information on the San Francisco Police Department ALERT Program, email us at sfpdalert@sfgov.org, or call Lt. Marina Chacon (SFPD Ret.), SFPD ALERT Program Coordinator, at (415) 401-4615.

For additional information on the web please refer to:

<https://sfgov.org/policecommission/alert>

Tech Article

UC Berkeley Engineering

Antenna evolution

<https://engineering.berkeley.edu/news/2025/01/tuning-in-to-the-possibilities-of-3d-printed-antenna-technology/>

Tuning in to the possibilities of 3D-printed antenna technology



A 3D fractal tree antenna fabricated using charge programmed multi-material 3D printing (CPD). With high printing precision, simple process protocol and vast design freedom, CPD offers a universal platform for fabricating all types of lightweight antennas. (Image courtesy of the researchers)

Tuning in to the possibilities of 3D-printed antenna technology

January 8, 2025 by William Schulz

Today, nearly all personal electronic devices rely on antennas to send and receive data. In fact, demand is also rising for lightweight antennas for new applications, including the latest in 5G/6G networks, advanced wearable devices and aerospace applications like

CubeSats. However, standard manufacturing techniques have limited the structural complexity and use of multiple materials that would unlock still more features and capabilities from antennas.

Now, a team led by Xiaoyu (Rayne) Zheng — associate professor in UC Berkeley's Department of Materials Science and Engineering and faculty co-director of Berkeley Sensors and Actuator Center (BSAC) and the Jacobs Institute for Design Innovation — has developed a new 3D printing/additive manufacturing platform that offers “unparalleled flexibility in antenna design and the capability for rapid printing of intricate antenna structures.”

As reported in the [latest issue of Nature Communications](#), the new platform — dubbed charge programmed multi-material 3D printing (CPD) — is a universal system for rapid production of nearly all 3D antenna systems. It can pattern highly conductive metals with a wide range of dielectric materials into a 3D layout.

Zheng emphasized that the platform is not an expensive 3D printer for metals that would involve pricey metal powders and high-energy lasers. “This technology can be applied to desktop-friendly light-based printers,” he said.

The CPD method combines a desktop digital light 3D printer and a catalyst-based technology that can pattern different polymers at different locations where they will attract metal plating. Its auto-catalytic or selective plating technology enables the polymers to selectively absorb metal ions into prescribed locations that are defined by the desired antenna design outcome.

CPD can broadly integrate with a variety of multi-material 3D printing methods, Zheng said. “It allows essentially any complex 3D structure, including complex lattices, and has demonstrated deposition of copper with near pristine conductivity, as well as magnetic materials, semiconductors, nanomaterials and combinations of these.”

Zheng has been working on the CPD platform since 2019 when his group first came up with the concept. In 2020, his team published their first [paper](#) in Nature Electronics on this technology, followed by a 2022 [paper](#) in Science that described the use of it to make microrobots.



A CPD-fabricated gradient phase transmitarray for generating highly directive radiation. The antenna features three layers of gradually tilted architected S-ring unit cells. (Image courtesy of the researchers)

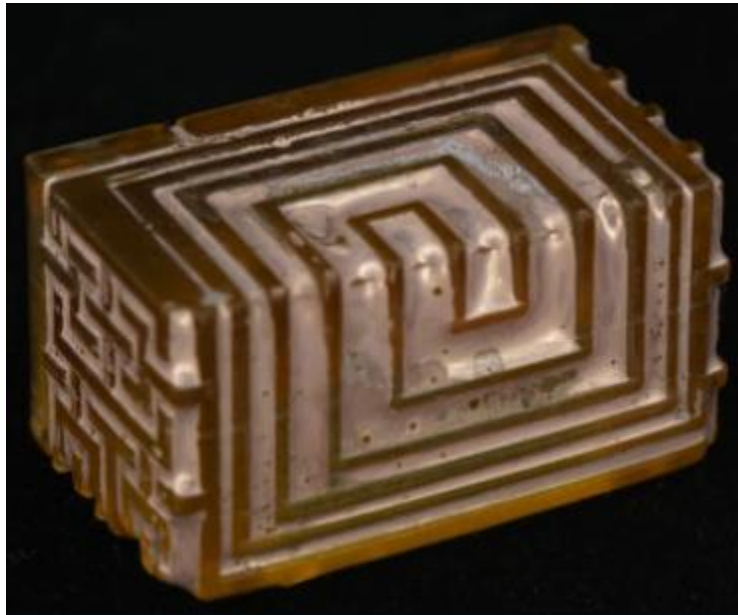
This latest paper is specific to the antenna application. CPD, Zheng said, is “very uniquely suited for antennas, because nearly all antennas need two components: One is the metal phase, the conductor, and the other is the dielectric phase, which is not conductive — and [until now] there has been no technology capable of directly patterning or synthesizing the conductor and dielectric materials together.”

Zheng explained that the first application they considered was in antennas. After discussing the technology with colleagues who specialize in this area, they realized that this technique could revolutionize how antennas are printed and open many new design possibilities.

Printing both the conductor (metal) and dielectric materials is especially important for antennas to be used in extreme environments. For example, Zheng said, “you cannot use a regular polymer in space. You need a high temperature polymer like Kapton, which is a good material in aerospace [stable at both very high and very low temperatures]. Now you can have Kapton and a pattern of metal traces interwoven in 3D at the same time.”

The team has also shown that through proper 3D designs, these antennas, without having to sit on a bulky substrate, achieve substantial weight savings compared to current antennas.

Co-author Yahya Rahmat-Samii, professor of electrical and computer engineering at UCLA, believes the CPD platform could significantly expand the possibilities for new antenna technologies and enable data-drive designs — allowing out-of-the box antenna designs for diverse applications. “There are probably numerous different antenna structures, depending on the application you have in mind,” he said.



A 3D folded implantable electrically small antenna featuring interpenetrating Archimedean spirals and Hilbert curves. (Image courtesy of the researchers)

Zheng and Rahmat-Samii next want to explore the full complexity of antenna design achievable with their new 3D printed antenna technology. Control of an antenna’s complexity gives them control over the ability to shape electromagnetic waves, much as a painter controls the application of paint with a brush.

Aiming to advance applications for this technology, the team at UC Berkeley has formed a startup company focused on flexible medical sensors that would conform, say, to the shape of a hand.

“We can achieve a tunable antenna,” Zheng said. “And so the question now is, where can that technology help us best?”

CARC/SARES ARRL Field Day 2025, Summary Write Up by Ed Fong - WB6IQN

ARRL Field Day was held on June 28th this year.

We had 46 folks sign the log. The food was catered by First Wok of Sunnyvale and folks brought plenty of drink, snacks and desserts. I received many complements on the quality and quantity of the food. Both vegetarian and meat eaters were accommodated. The hosting Fairbrae facility is of such quality you cannot beat. I went swimming and took a shower after dinner. This facility rents for \$200 for an evening but we get it for no charge for both Saturday and Sunday.

We were setup as 2A station. The bad part was some type of geomagnetic solar storm occurred Saturday afternoon. That pretty much disabled our HF SSB operation. With exception of FT-8 and CW it was very difficult to make any contacts. This is nice to know that these solar storms can occur during a disaster and wipe out HF communications during the day time. Solar storms fade as the sun sets.

There were several newly licensed hams that wanted to see a demonstration of HF but unfortunately this was not to be this day. By evening the noise slowly went away and we went back to normal operations. But by that time, all the folks had left.

There were only two of us that stayed throughout the evening. - Jeff Shimbo AK6TG and myself.

We did manage to make a few hundred contacts.



It was chow time.



Rob Busse - N9CFC helped me out with the raffle. I have known Rob for over 30 years.



David Veira KI6CLA won the first prize and pick the pair of Motorola GP68 – one for VHF and one for UHF. These are great commercial radios used by law enforcement throughout the world. Dave chose that as a first prized because had own all ham stuff and wanted to see what real radios were like.



Wolfgang Polak AI6SL– wins the ATS-20 all mode HF portable receiver. Wolfgang also contributed to the majority of CW contacts.



Joanne Rieke KN6AMZ won the TBJ-1 triband base antenna.

See you folks at next year's CARC/SARES ARRL Field Day Event!